

**BRIEF PRESENTED TO THE  
WORKERS COMPENSATION ACT LEGISLATIVE REVIEW COMMITTEE  
BY THE  
PLANNING, RESEARCH AND EVALUATION BRANCH  
MANITOBA ENVIRONMENT AND WORKPLACE SAFETY AND HEALTH**

**1.0 INTRODUCTION**

**1.1 What is the Planning, Research and Evaluation Branch?**

The Planning, Research and Evaluation Branch was established in 1984 to provide expertise and support services for the Department of Environment and Workplace Safety and Health which includes as one of its principal operational units the Workplace Safety and Health Division (WSHD) (Exhibit 1).

One of the chief responsibilities of the Branch is coordinating the development and implementation of strategic planning within the Department. In the realm of workplace safety and health, awareness of health risks has increased exponentially over the past 25 years. This presents particular challenges to ensure that Department activities are effective in accomplishing their objectives.

The Department of Environment and Workplace Safety and Health, following the mandates laid out in legislation such as the Workplace Safety and Health Act, has defined its mission as follows:

To protect and enhance the quality of the working public and natural environments for the health, safety and well-being of present and future generations of Manitobans and to provide the opportunity for all people to exercise influence over the quality of their living and working environments.

With regard to workplace environments, the particular orientation adopted has been the "establishment of safe and healthy workplaces by promoting and facilitating the resolution of problems in the workplace". In addition to fulfilling its statutory responsibilities of responding to complaints, serious incidents, and job refusals and ensuring compliance with the Workplace Safety and Health Act and its regulations, the WSHD has increasingly focused on prevention-related activities to reduce the incidence of work-related injuries and illness in Manitoba workplaces. This reflects a trend that is evident in comparable jurisdictions across Canada, the United States and most industrialized nations.

## 1.2 Objectives of this Brief

While the principal objective of workers compensation historically has been the provision of compensation to workers who are victims of work-related injuries or illnesses, the compensation system has a clear and demonstrable interest in reducing the incidence of workplace-related illness and injury. Without such reduction, the trends toward increased health care and related costs combined with increased difficulties into reintegration into the workplace contribute to placing tremendous financial strains on this system. This, in turn, jeopardizes the quality of compensation services afforded injured workers. Seen from this perspective there is a clear link between the activities of the WCB and the WSHD in Manitoba.

The Workers Compensation Act Legislative Review Committee has, through its hearings, had the opportunity to scrutinize the workings of the compensation system in Manitoba. This brief approaches the compensation system from a fundamentally different perspective: **the role of the workers compensation system in the prevention of work-related injuries and illness.** This "macro" approach is presented with the intention of complementing the litany of problems that have been identified through the "micro" review of the system.

While the issues addressed in this brief may tend to be general and conceptual, they do link to specific recommendations that can be considered by the Review Committee. Addressing these issues at this time is particularly opportune, as a number of new developments regarding occupational safety and health in Manitoba are on the immediate horizon:

- The Workplace Health Regulation, which has recently concluded its consultation phase, will establish a more rigorous framework for identifying and controlling occupational health hazards.
- A study of occupational health services is nearing completion and will include recommendations for meeting needs for such services in Manitoba.
- Close to 1200 joint workplace safety and health committees are now in place (or in formation) to meet the challenges of the second decade of the Workplace Safety and Health Act.

The links between the Workers Compensation system and the prevention-related activities of the Workplace Safety and Health Division are summarized by Exhibit 2. Within this framework, the issues addressed by this brief are as follows:

1. The commitment of the Workers Compensation Board to support prevention-related activities;
2. The need for more comprehensive recognition of work-related illness;
3. The statistical modifications required to provide data useful for planning prevention-related activities; and
4. The need for addressing protective reassignment.

## 2.0 ISSUES REGARDING PREVENTION

### 2.1 Commitment to Supporting Prevention-Related Activities

The Workers Compensation Act [Section 51(2)] assigns the Manitoba Workers Compensation Board (WCB) a narrow statutory mandate for addressing prevention-related activities and provides little explicit guidance.

The implications of how the Board's mandate is defined should not be underestimated, particularly at a time of financial restraint when any discretionary spending must be carefully reviewed. The present Board, for example, has indicated that the wording of its mandate caused them to question the advisability of supporting educational activities aimed at the prevention of back injuries, even though this problem accounts for a significant disbursement of funds in compensation awards.

An explicit commitment to the prevention of work-related illness and injury is fundamental to supporting any related activities, be this for education, problem identification, preventive measures, or the keeping of statistics.

In Manitoba, the Workers Compensation Board has a legislative requirement [Section 66(1) of the Workers Compensation Act] to provide funding for the Workplace Safety and Health Division to meet all costs and expenditures chargeable to the "Accident Fund" under the Workplace Safety and Health Act. The Workplace Safety and Health Act [Section 11(a)] outlines the expenditures which are covered by the Board's "Accident Fund". In 1983/84, the Board funded approximately three-quarters of the Workplace Safety and Health Division's \$2.3 M budget.

At present, per capita resources committed to Workplace Safety and Health programming is well below all Canadian provinces (except for Saskatchewan) according to a recent Labour Canada survey. Exhibit 3 illustrates that WCB transfers to the Workplace Safety and Health Division have remained fairly stable over the past five years, and have in fact, decreased as a proportion of the overall budget representing only 1% in 1985 (versus 5% in Quebec, for example).

Exhibit 4 indicates that the proportion of compensation board funding for prevention activities in Manitoba similarly is in fact below that of other provinces.

The British Columbia Workers Compensation Board, for example, has total responsibility for injury and disease in the workplace. Their mandate is broadly defined to address education and enforcement, as well as the prevention of occupational illness and injury and providing compensation for injured workers.

In Quebec, the Commission de la sante et de la securite du travail (CSST) has funded occupational health services out of their accident fund and the assessments that are collected from employers "must cover accident costs, the prevention costs specified by law, its administration expenses and its overhead expenses".

In Ontario, provision for funding accident prevention associations (\$35.2 million) is included in their legislation. While there has been controversy over the effectiveness of the programming that has resulted, there has nonetheless been a commitment to funding prevention-related activities.

Adjustments to achieving per capita parity with other jurisdictions would have minimal impact on overall Manitoba Board expenditures, as they represent a negligible amount of total spending.

As the Review Commission is aware, assessment rates in Manitoba remain among the lowest in Canada. From 1982 to 1984, lost-time injuries in Manitoba, on the other hand, rose at a rate greater than any other jurisdiction. While this was partly influenced by the relatively strong economic performance recorded over this period, it also contributed to the production of a deficit situation at the Board.

The authority vested in the WCB to determine an assessment structure does offer some opportunity for influencing prevention and creating incentives for controlling hazards. While the concept of accident experience rating has begun to be debated in Manitoba as a method of modifying assessment rate structures, there has been experimentation with performance-related financial merits and demerits in British Columbia related to prevention-related workplace behaviour. This approach avoids the possible negative influences that experience-rating provisions can have on reporting of accidents and illness.

## **2.2 Identification of Workplace-Related Disease**

Section 4 of the Workers Compensation Act assigns the WCB of Manitoba the responsibility of providing compensation for claimants who have contracted diseases related to occupational exposures, and puts forward the presumption that:

Where the accident arises out of the employment, unless the contrary is proven, it shall be presumed that it occurred in the course of the employment; and, where the accident occurs in the course of the employment, unless the contrary is proven, it shall be presumed that it arose out of the employment.

[Section 4(5)]

As the Review Commission is well aware, adjudication of occupational illness claims introduces a host of controversies, as illnesses rarely bear a distinct stamp as to their precise etiology.

It has been noted, in the Ontario context, that while the overall WCB claim rejection rate is quite low, in the neighbourhood of one or two percent, approximately 50% of occupational disease claims are rejected. It should furthermore be noted that the Ontario jurisdiction has itself often pioneered recognition of specific occupational diseases.

It is widely acknowledged that compensation board data grossly underestimate the extent of occupational disease in a jurisdiction. For example, debates over the degree to which workplaces are responsible for cancer deaths have been carried out in occupational epidemiological circles. While some estimates have been as high as 20% of all deaths, a more conservative consensus has emerged around the estimate of 4 or 5%. In the Manitoba context, this would account for between 80 and 100 deaths annually. In 1985, however, only a handful of compensated fatalities were attributable to occupational disease (chiefly heart attacks), and of these, only 2 were cancer cases. The same argument of undercompensation of occupational disease may be made with regard to morbidity.

While the fair and equitable adjudication of individual claims is a primary objective of the Workers Compensation Act, and forms the subject matter for much of the Review Committee's work, there is another dimension to the questions of comprehensive recognition of work-related disease. This is the role that disease recognition and compensation plays in the prevention of such diseases.

Unlike workplace injuries, which generally represent incidents that are clearly attributable to workplace events and which are themselves disruptive to the carrying out of production, work-related disease is typically a much more insidious phenomenon. Disease is often multifactorial and becomes manifest after long periods of exposure or after the elapsing of a long latency period.

While the suffering and disability experienced may be severe, costs of work-related diseases are typically borne by the victims and their families as well as by the general health care and social welfare system and externalized by the production process. Disease onset does not even necessarily pose a disruption to the workplace, as the affected worker is often no longer active when the full extent of his/her health problem becomes manifest.

A U.S. Congressional subcommittee on occupational injury and illness information systems observed the following:

Accurate and reliable data on occupational disease is essential in many areas. For public policy, it assists (responsible jurisdictions) in setting and revising health standards . . . Occupational disease information is also essential to employees and employers in alerting them to disease patterns as early as they become clinically significant. This can be particularly important to the health of the workers, but is also significant to the employer who can take corrective action and understand the full economic cost of doing business.

The social and economic dilemmas of underreporting of occupational disease were discussed by Manga et al. in the Canadian context in a study prepared for the Economic Council of Canada. Economic recognition of occupational health hazards is essential if prices of goods and services are to reflect their full costs. In the absence of such recognition "dangerous" goods will be overproduced from a societal perspective and will in essence be subsidized by the public at large (through socialized medical and social welfare costs) and diseased workers and their families. Economists of all political stripes agree that to function effectively, the market should cover attributable costs based on adequate information of risks and their associated costs.

As workers compensation boards are the responsible institutions in the Canadian context for the reporting and recognition of work-related disease, it falls to them to live up to the challenge that comes with this responsibility. Research into the work-relatedness of disease is proceeding rapidly. Exhibit 5 summarizes disease processes that have been recognized by the National Institute of Occupational Safety and Health in the United States as being linked to occupational exposures. It is important that professionally qualified personnel interpret and review this and related research in developing and applying board policies.

From an overall disease surveillance perspective, accurate occupational and exposure histories are generally lacking. This is equally true for claims adjudication. Even if the proposed Workplace Health Regulation were to come into effect in 1986, this problem would remain for quite some time, particularly with regard to past exposures. Faced with this obstacle, an open approach must be taken. Threshold limit values (TLVs) must be interpreted properly as general guidelines and not as magic numbers below which disease cannot occur.

Finally, if the Workers Compensation Board is to remain faithful to the spirit and letter of the Act, "work-relatedness" of disease must be assessed broadly in a manner consistent with the presumption clause [Section 4(5)] cited above. In most cases, there will be unclear causation and a variety of factors will have to be considered. Unless the Act is rewritten to explicitly permit denial of claims based on the identification of possible non-occupational etiology (which would be quite contrary to the general spirit of the legislation) judgements will have to be made with regard to whether there could be work-related etiology. Attributability, in these cases, will have to be apportioned between occupational and non-occupational factors as specified by Section 4(4). This would be essential even under a system of universal compensation of disability, although in this case, the function would primarily be for accounting purposes.

To summarize then, a broader recognition of work-related disease is essential not only for fair and equitable adjudication of claims from the perspective of the injured worker, but in order that prevention of further disease is effected so that all parties including society at large may benefit.

### 2.3 Provision of Statistical Information

In 1986, a computer link was established between the Workplace Safety and Health Division and the Workers Compensation Board of Manitoba. Although this link was several years in coming, it marks a major step forward in providing compensation data for prevention-related programming.

To be fully effective, however, particularly with regard to disease (in view of the problems cited above), some further modifications will have to be incorporated over time. These modifications are part of a national effort, as the limitations with regard to occupational disease reporting are general problems across Canada. As the commitment to making these modifications is linked to the mandate of the Board, some examples will be included below.

In 1985-86, recommendations were forwarded from the Federal/Provincial Advisory Committee on Environmental and Occupational Health to the Deputy Ministers of Health in all Canadian jurisdictions concerning the Notification of Occupational Disease. These are included as Exhibit 6. These recommendations are based on the understanding that current information systems are woefully lacking. The Director of National Institute for Occupational Safety and Health (NIOSH) observed that such systems are "70 years behind . . . (surveillance) of communicable disease". This analysis has been corroborated in the Canadian context by the Canadian Centre for Occupational Health and Safety and serve as the basis for these recommendations.

As workers compensation boards today provide the most comprehensive registry of workplace injury and illness, and as the creation of a totally new data base would be costly and inefficient, it would be preferable to employ Board data as part of a national effort.

Two specific measures to improve the usefulness of the Board data base would be the recording of rejected disease claims (as these are useful indicators in a contentious area) and the coding of disease claims according to a standard variant of the International Classification of Diseases. These measures would involve some minimal cost but the commitment to undertake the effort does hinge on how the Board interprets its mandate.

As well, the achievement of greater uniformity in the conditions for acceptance of claims of occupational diseases and illness should be sought through the Council of Workers Compensation Boards. To its credit, the Manitoba Board has attempted, albeit unsuccessfully, to achieve greater statistical compatibility between boards, and should be encouraged to persist in its efforts.

## 2.4 Protective Reassignment

A final area to be addressed by this brief concerns the right to protective reassignment of workers. Every worker currently has the right to "refuse work" without being penalized for doing so if that worker has reason to believe that the task constitutes an imminent danger to that worker's health.

Quebec has afforded the right to protective reassignment to pregnant and breast feeding workers since 1984. The Quebec Act accords the right of protective reassignment to any female worker whose working conditions may be hazardous to herself by reason of her pregnancy, or to her unborn or breast fed child, but who cannot be assigned to other responsibilities. If she cannot be given a more suitable position, she may start her maternity leave immediately and retains the right to resume her previous position as soon as considered fit to do so. In 1984, the CSST received 7,100 claims arising from the exercising of this right which amounted to approximately \$16.5 M paid out to women in benefits.

This approach is based on a principle of recognizing the particular needs of individual workers and represents an essential element of a comprehensive approach to prevention. The benefits and costs of such approaches universally or for particular conditions merits further consideration.

## 3.0 CONCLUSIONS

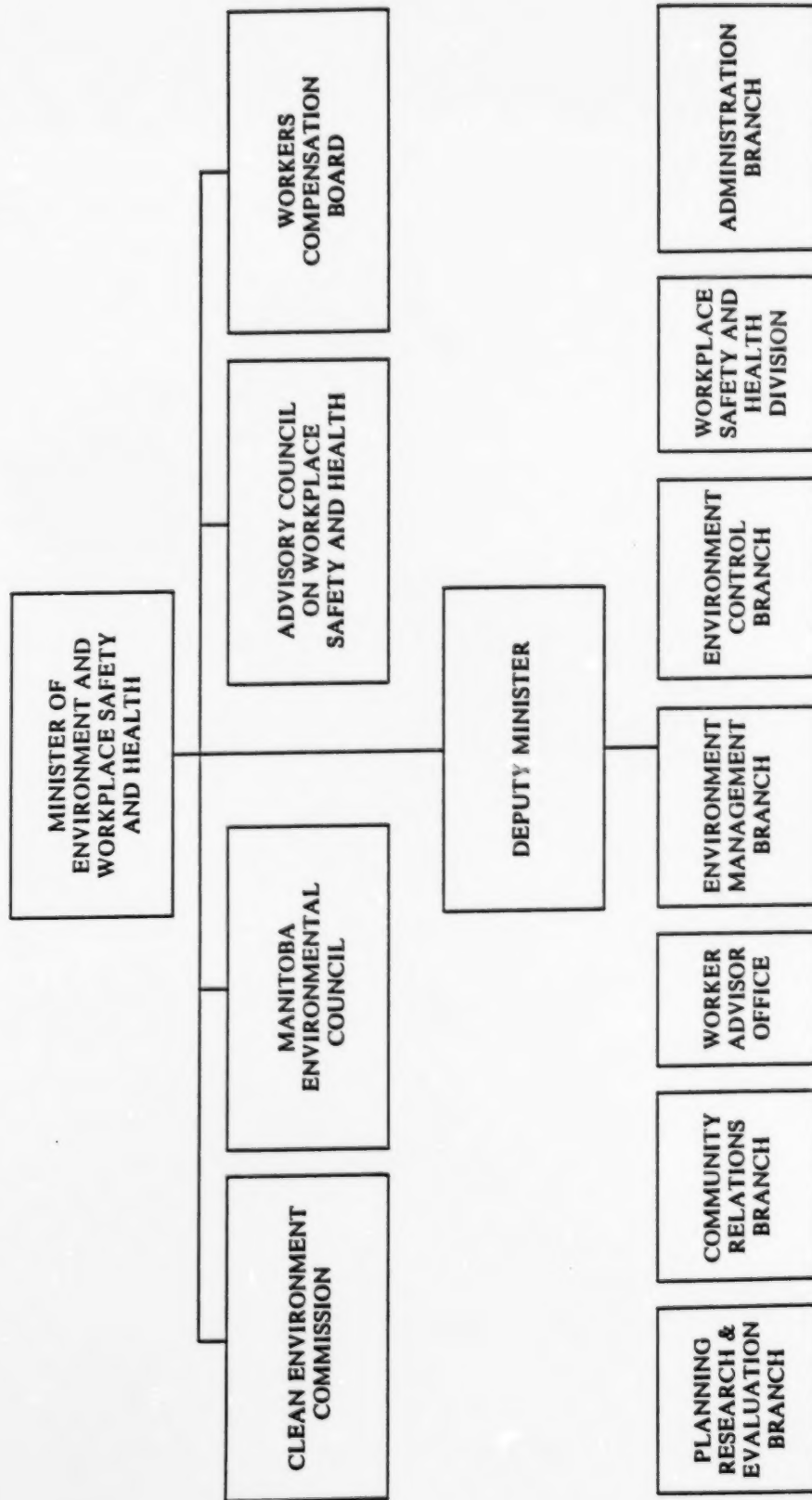
Based on the proceeding discussion, we would like to propose the following specific recommendations for the WCB Legislative Review Committee to consider:

1. A commitment by the WCB to supporting prevention-related activities be affirmed through formal definition of the Board's mandate and/or guidelines for developing Board policy.
2. A commitment to financially supporting prevention-related activities on a level at par with other Canadian jurisdictions be affirmed.
3. The presumption clause be applied to fully recognize findings in the scientific literature regarding the work-related disease.
4. The WCB should statistically include data on rejected disease claims.
5. The WCB should code disease claims by a variant of the International Classification of Diseases.
6. Study be conducted of merit and demerit adjustments to assesment rates based on adherence to prevention-related activities.
7. Study be conducted of protective reassignment provisions.

# • Organization Chart

Department of Environment and Workplace Safety and Health

EXHIBIT 1



# EXHIBIT 2

## WCB/WSHD INTERACTION

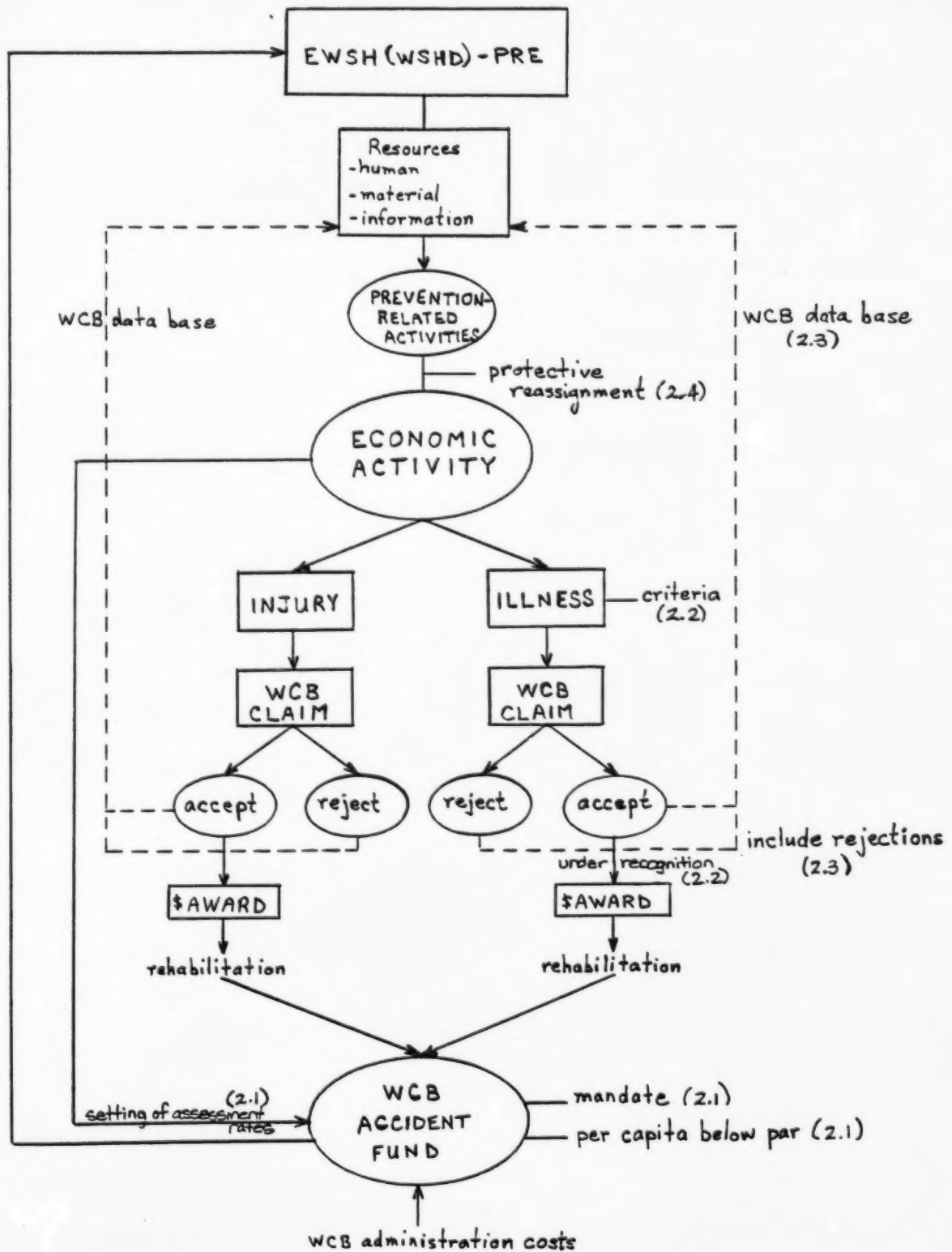


**EXHIBIT 3**

**PREVENTION-RELATED EXPENDITURES  
AS A PROPORTION OF  
TOTAL BOARD EXPENDITURES, 1982-85**

| <b>1982</b> | <b>1983</b> | <b>1984</b>   | <b>1985</b> | <b>Manitoba</b>                                         |
|-------------|-------------|---------------|-------------|---------------------------------------------------------|
| 1,324,500   | 1,730,700   | 1,968,000     | 1,957,829   | Charges under the<br>Workplace Safety<br>and Health Act |
| 53,246,501  | 83,706,286  | 98,168,381    | 112,145,148 | Total expenditures<br>of the Board                      |
| .02         | .02         | .02           | .01         | Proportion                                              |
| <b>1982</b> | <b>1983</b> | <b>1984</b>   | <b>1985</b> | <b>Quebec</b>                                           |
| 30,002,000  | 38,158,000  | 58,806,000    | N/A         | Prevention Program*                                     |
| 945,707,000 | 968,154,000 | 1,693,118,000 | N/A         | Total expenditures<br>of the Board                      |
| .03         | .03         | .05           | N/A         | Proportion                                              |

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\*i.e. excluding expenditures for prevention-inspection services.

# EXHIBIT 4

## COMPENSATION BOARD EXPENDITURES FOR PREVENTION-RELATED ACTIVITIES

|                                                | Alberta       |  | Ontario                 |                 | Quebec        |               | Saskatchewan |  | Manitoba |  |
|------------------------------------------------|---------------|--|-------------------------|-----------------|---------------|---------------|--------------|--|----------|--|
|                                                | 1984          |  | 1985                    |                 | 1984          |               | 1985         |  | 1985     |  |
| WCB funds for<br>Prevention-Related Activities | \$ 6,296,000  |  | \$ 35,200,000           | \$ 58,806,000   | \$ 1,799,971  | \$ 1,957,829  |              |  |          |  |
|                                                |               |  | (Safety<br>Association) |                 |               |               |              |  |          |  |
|                                                |               |  | \$ 6,900,000            |                 |               |               |              |  |          |  |
| Total Expenditures of WCB                      | \$247,858,000 |  | \$1,167,000,000         | \$1,093,118,000 | \$109,594,135 | \$112,145,148 |              |  |          |  |
| <u>Prevention Funds</u>                        |               |  |                         |                 |               |               |              |  |          |  |
| <u>Total Expenditures</u>                      | 2%            |  | 3%                      | 5%              | 1%            | 1%            |              |  |          |  |

## EXHIBIT 5

TABLE A-(O)—Occupationally Related Unnecessary Disease, Disability, and Untimely Death

| ICD-9    | CONDITION                                                               | A  | B    | C   | INDUSTRY/OCCUPATION*†                                                                                                                                                                                                                                                                                                                                                                                                             | AGENT                                                                                                                                                                                                                                                                         |
|----------|-------------------------------------------------------------------------|----|------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 011      | Pulmonary Tuberculosis (0)                                              | P* | P,T* | P,T | Physicians <sup>21</sup> , medical personnel <sup>142</sup> , med lab workers <sup>68</sup>                                                                                                                                                                                                                                                                                                                                       | <i>Mycobacterium tuberculosis</i> , 21,68,142                                                                                                                                                                                                                                 |
| 011, 502 | Silicotuberculosis                                                      | P  | P,T  | P,T | Quartermen, sandblasters, silica processors, mining, metal foundries, ceramic industry. <sup>43</sup>                                                                                                                                                                                                                                                                                                                             | SiO <sub>2</sub> + <i>Mycobacterium tuberculosis</i> , 33,68,158                                                                                                                                                                                                              |
| 020      | Plague (0)                                                              | P  | —    | P,T | Shepherds, farmers, ranchers, hunters, field geologists. <sup>17</sup>                                                                                                                                                                                                                                                                                                                                                            | <i>Yersinia pestis</i> , <sup>17</sup>                                                                                                                                                                                                                                        |
| 021      | Tularemia (0)                                                           | P  | —    | P,T | Hunters, fur handlers, sheep industry workers <sup>68</sup> , cooks, vets, ranchers, vet pathologists. <sup>169</sup>                                                                                                                                                                                                                                                                                                             | <i>Francisella tularensis</i> , 68,169                                                                                                                                                                                                                                        |
| 022      | Anthrax (0)                                                             | P  | —    | P,T | Shepherds, farmers, butchers, handlers of imported hides or furs <sup>68</sup> , veterinarians, veterinarian pathologists, weavers. <sup>118</sup>                                                                                                                                                                                                                                                                                | <i>Bacillus anthracis</i> , 30,118,170                                                                                                                                                                                                                                        |
| 023      | Brucellosis (0)                                                         | P  | P    | P,T | Farmers, shepherds, veterinarians, lab workers <sup>132</sup> , slaughterhouse workers. <sup>118,170</sup>                                                                                                                                                                                                                                                                                                                        | <i>Brucella abortus, suis</i> , 118,132,170                                                                                                                                                                                                                                   |
| 037      | Tetanus (0)                                                             | P  | —    | P,T | Farmers, ranchers. <sup>169</sup>                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Clostridium tetani</i> , <sup>169</sup>                                                                                                                                                                                                                                    |
| 056      | Rubella (0)                                                             | P  | P    | P   | Medical personnel <sup>61,113,142</sup> , intensive care personnel <sup>143</sup>                                                                                                                                                                                                                                                                                                                                                 | Rubella virus, 61,113,142                                                                                                                                                                                                                                                     |
| 070.0 .1 | Hepatitis A (0)                                                         | P  | P    | P   | Day care center staff <sup>68,171</sup> , orphanage staff <sup>67</sup> , mental retardation institution staff <sup>71,184</sup> , medical personnel <sup>62</sup>                                                                                                                                                                                                                                                                | Hepatitis A virus, 37,62,68,71,184,171                                                                                                                                                                                                                                        |
| 070.2 .3 | Hepatitis B (0)                                                         | P  | P    | P   | Nurses and aides, <sup>34,67,98</sup> anesthesiologists <sup>68</sup> , orphanage and mental institution staff <sup>64</sup> , med lab personnel <sup>68,102,108</sup> , general dentists <sup>124</sup> and oral surgeons <sup>68</sup> , physicians <sup>67,98,102</sup>                                                                                                                                                        | Hepatitis B virus, 38,54,58,67,98,102,108                                                                                                                                                                                                                                     |
| 070.4    | Non-A, Non-B Hepatitis (0)                                              | P  | P    | P   | As above for hepatitis A and B                                                                                                                                                                                                                                                                                                                                                                                                    | Unknown.                                                                                                                                                                                                                                                                      |
| 071      | Rabies (0)                                                              | P  | —    | P   | Veterinarians, animal and game wardens, lab researchers, farmers, ranchers, trappers. <sup>169</sup>                                                                                                                                                                                                                                                                                                                              | Rabies virus, <sup>169</sup>                                                                                                                                                                                                                                                  |
| 073      | Ornithosis (0)                                                          | P  | —    | P,T | Psittacine bird breeders, pet shop staff, poultry producers, veterinarians, zoo employees. <sup>119</sup>                                                                                                                                                                                                                                                                                                                         | <i>Chlamydia psittaci</i> , <sup>119</sup>                                                                                                                                                                                                                                    |
| 155M*    | Hemangiosarcoma of the Liver                                            | P  | P    | P   | Vinyl chloride polymerization industry, <sup>42</sup> Vintners. <sup>52</sup>                                                                                                                                                                                                                                                                                                                                                     | Vinyl chloride monomer, 42,68,67,168,184<br>Arsenical pesticides, 52,68                                                                                                                                                                                                       |
| 160.0    | Malignant Neoplasm of Nasal Cavities (0)                                | P  | P,T  | P,T | Woodworkers, cabinet, furniture makers, 12,14,34,107,151<br>Boot and shoe industry, <sup>11,12</sup><br>Radium chemists and processors <sup>52</sup> , dial painters <sup>141</sup><br>Chromium producers, processors, users, <sup>69</sup><br>Nickel smelting and refining, <sup>48,68,178</sup>                                                                                                                                 | Hardwood dusts, 12,14,34,107,151<br>Unknown, 11,12<br>Radium, 52,141<br>Chromates, <sup>69</sup><br>Nickel, 48,68,68,178<br>Asbestos, 68,140                                                                                                                                  |
| 161      | Malignant Neoplasm of Larynx (0)                                        | P  | P,T  | P,T | Asbestos industries and utilizers, <sup>149</sup>                                                                                                                                                                                                                                                                                                                                                                                 | Asbestos, 24,48,68,98,158                                                                                                                                                                                                                                                     |
| 162      | Malignant Neoplasm of Trachea, Bronchus, and Lung (0)                   | P  | P    | P   | Asbestos industry and utilizers, <sup>24,48,98</sup><br>Topsoil coke oven workers, <sup>104,148,149</sup><br>Uranium and fluor spar miners, <sup>48</sup><br>Chromium producers and processors <sup>61</sup> , users, <sup>108,172</sup><br>Nickel smelters, processors, users, <sup>48,68</sup><br>Smelters, <sup>173</sup><br>Mustard gas formulators, <sup>168</sup><br>Ion exchange resin makers, chemists, <sup>57,188</sup> | Asbestos, 24,48,68,98,158<br>Coke oven emissions, 104,148,149<br>Radon daughters, <sup>45</sup><br>Chromates, <sup>51,68,108,172</sup><br>Nickel, 48,68,68<br>Arsenic, 48,173<br>Mustard gas, <sup>168</sup><br>Bis(chloromethyl) ether, chloromethyl methyl ether, 57,68,188 |
| 158, 163 | Mesothelioma (MN of Peritoneum) (MN of Pleura)                          | P  | —    | P   | Asbestos industries and utilizers, <sup>24,68</sup>                                                                                                                                                                                                                                                                                                                                                                               | Asbestos, 24,68,68,98,158,168                                                                                                                                                                                                                                                 |
| 170      | Malignant Neoplasm of Bone (0)                                          | P  | —    | P   | Dial painters <sup>108</sup> , radium chemists and processors, <sup>52</sup>                                                                                                                                                                                                                                                                                                                                                      | Radium, 52,108                                                                                                                                                                                                                                                                |
| 187.7    | Malignant Neoplasm of Scrotum                                           | P  | —    | P,T | Automatic lathe operators <sup>72,91</sup> , metalworkers <sup>158</sup><br>Coke oven workers, petroleum refiners, tar distillers, <sup>72</sup>                                                                                                                                                                                                                                                                                  | Mineral/cutting oils, 72,98,91<br>Soots and tars, tar distillates, <sup>72,88</sup>                                                                                                                                                                                           |
| 188      | Malignant Neoplasm of Bladder (0)                                       | P  | —    | P   | Rubber and dye workers, <sup>38,48,188</sup>                                                                                                                                                                                                                                                                                                                                                                                      | Benzidine, <sup>158,188</sup> , alpha and beta naphthylamine <sup>48,88</sup> , auramine <sup>48,88</sup> , magenta <sup>48,88</sup> , 4-aminobiphenyl <sup>118</sup> , 4-nitrophenyl, <sup>68,178</sup>                                                                      |
| 189      | Malignant Neoplasm of Kidney, Other, and Unspecified Urinary Organs (0) | P  | P    | P   | Coke oven workers, <sup>148,149</sup>                                                                                                                                                                                                                                                                                                                                                                                             | Coke oven emissions, <sup>148,149</sup>                                                                                                                                                                                                                                       |
| 204      | Lymphoid Leukemia, Acute (0)                                            | P  | —    | P   | Rubber industry, <sup>114,118</sup><br>Radiologists, <sup>110,111</sup>                                                                                                                                                                                                                                                                                                                                                           | Unknown, 114,118<br>Ionizing radiation, 41,110,111                                                                                                                                                                                                                            |
| 205      | Myeloid Leukemia, Acute (0)                                             | P  | —    | P   | Occupations with exposure to benzene<br>Radiologists, <sup>110,111</sup>                                                                                                                                                                                                                                                                                                                                                          | Benzene, 18,88,94,98,188,181<br>Ionizing radiation, 41,110,111                                                                                                                                                                                                                |
| 207.0    | Erythroleukemia (0)                                                     | P  | —    | P   | Occupations with exposure to benzene.                                                                                                                                                                                                                                                                                                                                                                                             | Benzene, 18,88,94,98,188,181                                                                                                                                                                                                                                                  |
| 283.1    | Hemolytic Anemia, Non-auto-immune (0)                                   | P  | —    | P,T | Whitewashing and leather industry, <sup>44</sup><br>Electrolytic processes, arsenical ore smelting, <sup>78</sup><br>Plastics industry, <sup>13</sup><br>Dye, celluloid, resin industry, <sup>69</sup><br>Explosives manufacture, <sup>41,148</sup><br>Occupations with exposure to benzene.<br>Radiologists <sup>111</sup> , radium chemists and dial painters <sup>142</sup>                                                    | Copper sulfate, <sup>44</sup><br>Arsine, <sup>78,98,134,138</sup><br>Trimellitic anhydride, <sup>13</sup><br>Naphthalene, <sup>69</sup><br>TNT, <sup>70,81,148</sup><br>Benzene, 18,188,181<br>Ionizing radiation, 41,111,188                                                 |
| 284.8    | Aplastic Anemia (0)                                                     | P  | —    | P   |                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                               |

Source: Rutstein, D.D., et. al. "Sentinel Health Events (Occupational): A Basis for Physician Recognition and Public Health Surveillance". American Journal of Public Health, Vol. 73, (1983) pp. 1054-1062.

## SENTINEL HEALTH EVENTS (OCCUPATIONAL)

TABLE A-(O)—Continued

| ICD-9              | CONDITION                                                                      | A   | B   | C   | INDUSTRY/OCCUPATION <sup>†</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | AGENT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------|--------------------------------------------------------------------------------|-----|-----|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 288.0              | Agranulocytosis or Neutropenia (0)                                             | P   | —   | P   | Occupations with exposure to benzene, Explosives and pesticide industries. <sup>32</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Benzene. <sup>18,190,191</sup><br>Phosphorus. <sup>32</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 289.7              | Methemoglobinemia (0)                                                          | P   | —   | P,T | Pesticides, pigments, pharmaceuticals. <sup>93</sup><br>Explosives and dye industries. <sup>68,70,123,198</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Inorganic arsenic. <sup>93</sup><br>Aromatic amino and nitro compounds (eg, aniline, TNT, nitroglycerin). <sup>68,70,91,123,198</sup><br>Lead. <sup>19,31</sup>                                                                                                                                                                                                                                                                                                                                               |
| 323.7              | Toxic Encephalitis (0)                                                         | P   | P   | P   | Battery, smelter, and foundry workers. <sup>19,31</sup><br>Electrolytic chlorine production, battery makers, fungicide formulators. <sup>22,31</sup>                                                                                                                                                                                                                                                                                                                                                                                                                              | Inorganic and organic mercury. <sup>22,31,98</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 332.1              | Parkinson's Disease (Secondary) (0)                                            | P   | P   | —   | Manganese processing, battery makers, welders. <sup>154</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Manganese. <sup>154,157</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 334.3              | Cerebellar Ataxia (0)                                                          | P   | P   | —   | Internal combustion engine industries. <sup>60</sup><br>Chemical industry using toluene. <sup>28</sup><br>Electrolytic chlorine production, battery makers, fungicide formulators. <sup>31,43</sup>                                                                                                                                                                                                                                                                                                                                                                               | Carbon monoxide. <sup>60</sup><br>Toluene. <sup>28</sup><br>Organic mercury. <sup>31,43</sup>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 357.7              | Inflammatory and Toxic Neuropathy (0)                                          | P   | P,T | P,T | Pesticides <sup>75</sup> , pigments, pharmaceuticals. <sup>48</sup><br>Furniture refinishers, degreasing operations. <sup>74</sup><br>Plastic-coated-fabric workers. <sup>28</sup><br>Explosives industry. <sup>70</sup><br>Rayon manufacturing. <sup>58,179</sup><br>Plastics, hydraulics, coke industries. <sup>121</sup><br>Battery, smelter, and foundry workers. <sup>19,31</sup><br>Dentists <sup>88,181</sup> , chloralkali workers. <sup>198</sup><br>Chloralkali plants, fungicide makers, battery makers. <sup>43</sup>                                                 | Arsenic and arsenic compounds. <sup>48,75</sup><br>Hexane. <sup>74,155</sup><br>Methyl n-butyl ketone. <sup>28</sup><br>TNT. <sup>70</sup><br>CS <sub>2</sub> . <sup>58,155,177,179</sup><br>Tri-o-cresyl phosphate. <sup>121,158</sup><br>Inorganic lead. <sup>19,31,58,155</sup><br>Inorganic mercury. <sup>88,181,198</sup><br>Organic mercury. <sup>43,58</sup>                                                                                                                                           |
| 368.4              | Cataract (0)                                                                   | P   | P,T | —   | Plastics industry. <sup>127</sup> , paper manufacturing. <sup>109</sup><br>Microwave and radar technicians. <sup>90</sup><br>Explosives industries. <sup>70</sup><br>Radiologists. <sup>120</sup><br>Blacksmiths, glass blowers, bakers. <sup>129</sup><br>Moth repellent formulators, fumigators. <sup>59</sup><br>Explosives, dye, herbicide and pesticide industries. <sup>130</sup>                                                                                                                                                                                           | Acrylamide. <sup>106,127,155</sup><br>Microwaves. <sup>90</sup><br>TNT. <sup>63,70</sup><br>Ionizing radiation. <sup>63,120</sup><br>Infrared radiation. <sup>63,129</sup><br>Naphthalene. <sup>59,63,120</sup><br>Dinitrophenol. <sup>120</sup> , dinitro-o-cresol. <sup>130</sup>                                                                                                                                                                                                                           |
| 388.1              | Noise Effects on Inner Ear (0)                                                 | P   | P   | —   | Exposure. <sup>131</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Excessive noise. <sup>131</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 443.0              | Raynaud's Phenomenon (Secondary) (0)                                           | P   | —   | —   | Lumberjacks. <sup>144</sup> , chain sawyers, grinders, chipper. <sup>173</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Whole body or segmental vibration. <sup>97,144,173</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 495.0 to 495.6, .8 | Extrinsic Allergic Alveolitis                                                  | P   | P   | P,T | Vinyl chloride polymerization industry. <sup>47,98,103</sup><br>Farmer's lung, bagassosis, bird fancier's lung, suberosis, malt worker's lung, mushroom worker's lung, maple bark disease, cheese washer's lung, coffee worker's lung, fish-meal worker's lung, turner's lung, sequoiosis, wood worker's lung, miller's lung. <sup>147,187</sup>                                                                                                                                                                                                                                  | Vinyl chloride monomer. <sup>47,97,98,103</sup><br>Various agents. <sup>147,187</sup>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 493.0, 507.8       | Extrinsic Asthma (0)                                                           | P   | P,T | P,T | Jewelry, alloy and catalyst makers. <sup>35,128</sup><br>Polyurethane, adhesive, paint workers. <sup>35,128</sup><br>Alloy, catalyst, refinery workers. <sup>35</sup><br>Solderers. <sup>35</sup><br>Plastic, dye, insecticide makers. <sup>35</sup><br>Foam workers, latex makers, biologists. <sup>35</sup><br>Printing industry. <sup>35</sup><br>Nickel platers. <sup>35</sup><br>Bakers. <sup>35,174</sup><br>Plastics industry. <sup>35,128</sup><br>Woodworkers, furniture makers. <sup>35</sup><br>Detergent formulators. <sup>35</sup><br>Coal miners. <sup>78,122</sup> | Platinum. <sup>35,125,137</sup><br>Isocyanates. <sup>35,137,138</sup><br>Chromium and cobalt. <sup>38</sup><br>Aluminum soldering flux. <sup>35</sup><br>Phthalic anhydride. <sup>35,137</sup><br>Formaldehyde. <sup>35</sup><br>Gum arabic. <sup>35</sup><br>NiSO <sub>4</sub> . <sup>35</sup><br>Flour. <sup>35,174</sup><br>Trimellitic anhydride. <sup>35,138,137</sup><br>Red cedar and other wood dusts. <sup>38</sup><br>Bacillus-derived exoenzymes. <sup>35</sup><br>Coal dust. <sup>78,92,122</sup> |
| 500                | Coalworkers' Pneumoconiosis                                                    | P   | P   | P   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 501                | Asbestosis                                                                     | P   | P   | P   | Asbestos industries and utilizers. <sup>24,98,129</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Asbestos. <sup>24,92,99,128,139</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 502M               | Silicosis                                                                      | P   | P   | P   | Quarries, sandblasters, silica processors <sup>30</sup> , mining, metal, and ceramic industries. <sup>129,190</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Silica. <sup>20,92,129,159,190</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                    | Talcosis                                                                       |     |     |     | Talc processors. <sup>95</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Talc. <sup>95</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 503M               | Chronic Beryllium Disease of the Lung                                          | P   | P   | P   | Beryllium alloy workers, ceramic and cathode ray tube makers, nuclear reactor workers. <sup>68,183</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Beryllium. <sup>68,183</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 504                | Byssinosis                                                                     | P   | P   | P   | Cotton industry workers. <sup>28,117,129</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Cotton, flax, hemp, and cotton-synthetic dusts. <sup>117,28,129</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 506.0, 506.1       | Acute Bronchitis, Pneumonitis, and Pulmonary Edema Due to Fumes and Vapors (0) | P,T | P,T | P   | Refrigeration, fertilizer <sup>109</sup> , oil refining industries. <sup>123</sup><br>Alkali and bleach industries. <sup>123</sup><br>Silo fillers, arc welders, nitric acid industry. <sup>58</sup><br>Paper and refrigeration industries, oil refining. <sup>123</sup><br>Cadmium smelters, processors. <sup>123</sup><br>Plastics industry. <sup>73</sup>                                                                                                                                                                                                                      | Ammonia. <sup>109,123</sup><br>Chlorine. <sup>123</sup><br>Nitrogen oxides. <sup>58,123</sup><br>Sulfur dioxide. <sup>123</sup><br>Cadmium. <sup>123</sup><br>Trimellitic anhydride. <sup>73</sup>                                                                                                                                                                                                                                                                                                            |
| 570, 573.3         | Toxic Hepatitis (0)                                                            | P   | P   | P   | Solvent utilizers, dry cleaners, <sup>23</sup> plastics industry. <sup>108</sup><br>Explosives and dye industries. <sup>32,70</sup><br>Fire and waterproofing additive formulators. <sup>78,94</sup><br>Plastics formulators. <sup>112</sup>                                                                                                                                                                                                                                                                                                                                      | Carbon tetrachloride <sup>108</sup> , chloroform <sup>27</sup> , trichloroethane <sup>108</sup> , trichloroethylene. <sup>18,23</sup><br>Phosphorus <sup>32</sup> , TNT <sup>70,188</sup><br>Chloronaphthalenes. <sup>78,94</sup><br>Methylenedianiline. <sup>112</sup>                                                                                                                                                                                                                                       |

TABLE A-(O)—Continued

| ICD-9    | CONDITION                           | A   | B   | C   | INDUSTRY/OCCUPATION*†                                                                                                            | AGENT                                                                                                                                                                  |
|----------|-------------------------------------|-----|-----|-----|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          |                                     |     |     |     | Fumigators, gasoline, fire extinguisher formulators. <sup>133</sup>                                                              | Ethylene dibromide. <sup>133</sup>                                                                                                                                     |
|          |                                     |     |     |     | Disinfectant, fumigant, synthetic resin formulators. <sup>46</sup>                                                               | Cresol. <sup>46</sup>                                                                                                                                                  |
| 584, 585 | Acute or Chronic Renal Failure (0)  | P   | P,T | P,T | Battery makers, plumbers, solderers. <sup>157</sup>                                                                              | Inorganic lead. <sup>157</sup>                                                                                                                                         |
|          |                                     |     |     |     | Electrolytic processes, arsenical ore smelting. <sup>73,138</sup>                                                                | Arsine. <sup>73,134,138,157</sup>                                                                                                                                      |
|          |                                     |     |     |     | Battery makers, jewelers, dentists. <sup>157</sup>                                                                               | Inorganic mercury. <sup>157</sup>                                                                                                                                      |
|          |                                     |     |     |     | Fluorocarbon formulators, fire extinguisher makers. <sup>157</sup>                                                               | Carbon tetrachloride. <sup>64,157</sup>                                                                                                                                |
| 606      | Infertility, Male (0)               | P   | P   | —   | Antifreeze manufacture. <sup>25</sup>                                                                                            | Ethylene glycol. <sup>25</sup>                                                                                                                                         |
|          |                                     |     |     |     | Formulators. <sup>38</sup>                                                                                                       | Kepona. <sup>38</sup>                                                                                                                                                  |
|          |                                     |     |     |     | DBCP producers, formulators, and applicators. <sup>50,152,188</sup>                                                              | Dibromochloropropane. <sup>50,152,188</sup>                                                                                                                            |
| 692      | Contact and Allergic Dermatitis (0) | P,T | P,T | —   | Leather tanning, poultry dressing plants, fish packing, adhesives and sealants industry, boat building and repair. <sup>13</sup> | Irritants (e.g., cutting oils, solvents, phenol, acids, alkalis, detergents); Allergens (e.g., nickel, chromates, formaldehyde, dyes, rubber products). <sup>148</sup> |

External causes of injury and poisoning (occupational) include accidents and are classified in the ICD-9 under the E codes.

A = Unnecessary disease

B = Unnecessary disability

C = Unnecessary untimely death

\* = INDUSTRY/OCCUPATION listings are examples only

† Industry/Occupation reference numbers inside commas and inside periods apply only to the immediately preceding category; those outside of periods apply to all prior categories pertaining to a particular agent or process.

+ (0) = Only where an occupational exposure can be established

\* P = prevention, T = treatment

\*M = Modified ICD rubric

## EXHIBIT 6

### RECOMMENDATIONS

- 1) A system for surveillance of occupational diseases should be set up in each of the thirteen jurisdictions in Canada. The ultimate objective would be to establish a uniform system across Canada.
- 2) The Deputy Ministers of Health in each jurisdiction (province, territory, federal government) should accept overall responsibility for the establishment and maintenance of a surveillance system in consultation with the organization that has the prime authority in that jurisdiction over occupational health. In some jurisdictions, this will be a Ministry of Labour, in others an occupational health and safety council, and in some, a Workers' Compensation Board. In some jurisdictions, this may be a shared responsibility. We recommend that the program include these components:
  - a) investigating new and suspected cases of occupational disease; and coordination of all aspects of passive and active surveillance of occupational diseases;
  - b) maintaining an awareness of investigations and surveys done in workplaces for occupational health hazards;
  - c) coordinating the collection and distribution of information and statistics from all relevant sources within their province related to occupational health;
  - d) analysis and interpretation.
- 3) Since a major source of information for the surveillance system will have to be data from Workers' Compensation Boards, we recommend that Deputy Ministers of Health encourage those responsible for Workers' Compensation Boards to:
  - a) seek through their Council of Workers' Compensation Boards the achievement of greater uniformity in the conditions for acceptance of claims of occupational diseases and illness;
  - b) all use a standard variant of the International Classification of Diseases in order to code occupational injuries and diseases which should include poisonings;
  - c) code industry and occupation according to the requirements of the National Work Injury Statistics Program;
  - d) refine the "source of injury" Z16.2 code used to allow greater specificity in the work hazard and exposure that resulted in an occupational disease;

- e) distribute validated claims statistics at the provincial level, in the form of an annual statistical report giving accepted claims by ICD code and occupation, by ICD code and industry and by ICD code and source of disease. The report should also indicate trends.
  - f) provide coded data on validated claims to the National Work Injuries Statistics Program at Statistics Canada.
- 4) The data in the National Work Injuries Statistics Program should be enlarged to include occupation related diseases and illnesses, so that national statistics on accepted claims for occupational diseases and illnesses can be compiled.
- 5) Existing medical information should be supplemented with occupational information:
- a) A person's present occupation(s) and industry should be recorded on all hospital separation forms in Canada. This occupational information should be coded using the occupational coding system presently in use by all Workers' Compensation Boards in Canada. This information should be included in the data passed to Statistics Canada on "episodes of hospitalization", and should include sufficient identifiers to permit matching with employee history records. Statistics Canada should then include in its annual published reports on hospitalization various tables giving numbers of hospitalization episodes and/or length of stay by ICD code and occupation.
  - b) Efforts should be made at each provincial level to ensure that the principal occupation and industry of a person during that person's life is routinely recorded on death certificates, that this information be of a high quality as it practical, and that it be entered into provincial mortality files and into the national Mortality Data Base in Statistics Canada. As it now exists, the Mortality Data Base does not contain either contributing cause of death information, nor does it contain occupational identifiers.
  - c) Workers' occupational history and industry should be routinely recorded for each cancer case. Provisions should be made for capturing information on past occupations as well. This occupational information should go into the provincial cancer registries and be forwarded to the National Cancer Incidence Reporting System.

- d) The occupation and industry of the biological father and mother should be routinely recorded for all cases of stillbirths, spontaneous abortions and congenital anomalies. This occupational information should be amongst the information that is forwarded to the National Congenital Anomalies Register.
- 6) Existing sources of employment history records, including the census and the labour force survey should include identifiers (complete name, date of birth, place of birth, maiden name) and hospital insurance number to permit matching to health records. Additional questions concerning occupation and health and a request for permission to link that data to other data banks should be included in the census.
- 7) The Federal/Provincial Advisory Committee will be asked to monitor the implementation of this program and report back to the Conference of Deputy Ministers of Health.